PROJECT facts

DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
FEDERAL ENERGY TECHNOLOGY CENTER

ADVANCED CLEAN/EFFICIENT **POWER** systems

PS012.0697

THE DEVELOPMENT OF COAL-BASED FUEL TECHNOLOGIES FOR DEPARTMENT OF DEFENSE FACILITIES

PRIMARY PROJECT PARTNERS

The Pennsylvania State University

MAIN SITE

University Park
State College, PA

TOTAL ESTIMATED COST

$18,188,000

COST SHARING

DOE	**$14,688,000**
Non-DOE	**$3,500,000**

Project Description

The cooperative agreement with Pennsylvania State University was awarded in September 1992 and will continue through October 1998. The project will provide the Department of Defense (DOD) with technologies to utilize coal-based fuels as alternatives to oil and gas in industrial-scale boilers in order to decrease the military's reliance on these premium fuels. The R&D includes long-term tests at Penn State's demonstration boiler facility. The unit is a commercial Tampella-Keeler boiler, designed to fire oil, which has been converted to burn coal-based fuels in the form
of coal-water fuel or dry, micronized coal.

The culmination of this project will lead to engineering designs for converting boilers from oil or gas to coal by incorporating technologies that will help ensure reliable, environmentally acceptable operation with minimal derating. To achieve this, it is necessary to develop specialized components, appropriate coal-based fuel-preparation techniques, and emissions-control strategies. The project has been structured in three phases, each of which addresses specific, critical aspects of substituting coal-based fuels for oil or gas. Activities in Phase I evaluated system performance when firing coal-based fuels. Phase II will emphasize tests of emissions controls and their impact on performance and economics.

Experimental work will be extended into more advanced concepts in Phase III; the market potential for these coal-based fuels will be assessed, with Pennsylvania as a case study. The fuel mix employed by DOD will be examined, and a separate study will recommend a National Energy Policy designed to minimize the impact of another "oil price shock".

Program Goal

Although the primary purpose of the program is to assist the DOD in converting some of its installations to coal-based fuels, the oil and gas-designed power and heating systems at military installations are commercial units widely used by industries throughout the United States and the world. Because the developments in this project can be transferred to non-military facilities, they should also benefit the general public and add to the U.S. capabilities for exporting technology.

The Development of Coal-Based Fuel Technologies for Department of Defense Facilities

CONTACT POINTS

Alan Scaroni
The Pennsylvania State University
University Park, PA
(814) 863-3264
(814) 863-7432 fax
aws1@psu.edu

Lawrence A. Ruth
U.S. Department of Energy
Federal Energy Technology Center
Pittsburgh, PA
(412) 892-4461
(412) 892-5917 fax
ruth@fetc.doe.gov

Project Partners

The Commonwealth of Pennsylvania
(co-sponsor)

The Department of Defense
(co-sponsor)

Project Benefits

In addition to experimental development, Penn State has performed economic analyses of boiler retrofit options and studies of social attitudes toward increased use of coal through advanced, clean technologies. These efforts, while targeted originally at DOD installations, have wide applicability to commercial boilers in the private sector. Market studies conducted by DOE/PETC have shown large numbers of commercial- and industrial-size boilers in the U.S. for which conversion to coal can be justified when an appropriate price differential exists between coal and premium fuels.

As the most plentiful and strategically secure fuel, coal dominates the generation of electric power in the U.S. It has the potential to decrease the nation's reliance on premium fuels in the commercial and industrial sectors also.

Cost Profile

(Dollars in Millions)

	Prior Investment	FY95	FY96	FY97	Future Funds**
Department of Energy*	$15.0	—	—	—	—
Private Sector Partners	$3.5	—	—	—	—

* Funding appropriated through the Department of Defense

** Commonwealth of Pennsylvania

Key Milestones